Observer-Coherence Enhancement in Plasma Physics: Lattice Fusion and Reconnection

Abstract

This companion paper presents a unified methodological pattern underlying two independent plasma-physics frameworks: lattice-based fusion enhancement and observer-triggered magnetic reconnection. Both systems share a common architecture in which a baseline physical parameter is augmented by a bounded, state-dependent enhancement term, while strict energy conservation is enforced through explicit accounting.

Lattice Fusion Framework

In lattice-based fusion models, a baseline screening or interaction parameter is modified by bounded coherence or loading terms, with all reaction energy sourced strictly from nuclear processes.

Reconnection Closure Framework

In magnetic reconnection, a baseline resistivity is augmented by a bounded anomalous closure, with all additional dissipation conservatively routed to internal energy.

Shared Mathematical Architecture

Both frameworks adopt the general structure: Effective Parameter = Baseline + Bounded State-Triggered Enhancement, subject to conservation constraints.

Conclusion

The recurrence of this architecture across distinct plasma phenomena suggests a reusable, conservative design pattern for state-dependent enhancement models.